Kankesu Jayanthakumaran
Reetu Verma
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Edgar Wilson *Editors*

# Internal Migration, Urbanization, and Poverty in Asia: Dynamics and Interrelationships

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# Chapter 1
# Introduction


**Kankesu Jayanthakumaran, Reetu Verma, Guanghua Wan, and Edgar Wilson**

The purpose of this book is to provide a *dynamic* portrayal of internal migration, urbanization, and poverty in Asia. It comprises papers presented and critically reviewed at an Asian Development Bank workshop held in Siem Reap, Cambodia, on November 5–7, 2014. The issues addressed in this volume are important as unprecedented demographic transitions and structural transformations are taking place in Asia. While these changes have the potential to improve the well-being of many households, the complexities involved represent significant challenges to policymakers and other stakeholders. Also, there is an apparent lack of attention to the interrelated and dynamic nature of these issues.

Asia deserves special attention since it is home to over 50% of the world's urban population.[1] The People's Republic of China (PRC) has the largest urban population of 758 million, followed in second place by India with 410 million, while Indonesia has the world's fifth largest urban population of 134 million. These three countries account for around one-third of the world's urban population.[2] Further, Asia is fast urbanizing, and by 2050, the urban population of the region may increase by one billion or more. The largest increases are projected to be in India (over 400 million), the PRC (300 million), and Indonesia (100 million). More than one-third of the

[1] This compares with Europe comprising only 14% and Latin America and the Caribbean 13% of the world's urban population (UN DESA *World Urbanization Prospects*: *The 2014 Revision*).

[2] The other countries with large urban populations are the United States with 263 million, Brazil 173 million, Japan 118 million, and the Russian Federation 105 million.

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increase in the world's urban population by 2050 will occur in India and the PRC alone.

Rural to urban migration is estimated to contribute about one-third of this urban expansion in Asia. In the PRC, around 150 million people have moved from rural to urban regions since the start of the 1990s (Freeman 2006), while in India there are almost 100 million transient migrants (Deshingkar and Akter 2009). It is expected that these contributions to the predicted 2.4% annual growth in Asian urbanites will certainly help promote regional growth. However, these factors may also contribute to the problem of aging.[3] In general, migrants to urban areas are younger, but the fertility of migrants tends to decline relative to rural counterparts, mainly because of the higher costs of raising children, better education, higher age at marriage, and greater access to contraception.

Turning to poverty, although urban poverty has been falling and is typically less prevalent than rural poverty, urban inequality has been rising. Urban gaps between the formal and informal sectors are widening, and there is also evidence of increasing polarizations. A large proportion of urban migrants have to survive in slums. For example, in 2009, the percentage of slum dwellers in the urban population was 62% in Bangladesh, 47% in Pakistan, 41% in the Philippines, 36% in Viet Nam, and 29% in both the PRC and India (UN Habitat 2012).

There are other important issues related to internal migration, urbanization, and poverty. Rapid urbanization will continue to place pressure on the provision of infrastructure, utilities, health care, and education services.[4] It will also stimulate the demand for energy, thus increasing air, water, and land pollution.[5]

Given this background, it is important to examine the complex and evolving dynamic interrelationships between internal migration, urbanization, and poverty. The studies presented in Part I form the thematic epistemological contribution of these interdependencies, and the new evidence presented covers a wide range of possibilities. Part II focuses on the better-known positive effects of migration and urbanization in reducing urban poverty. This is then balanced in Part III with studies showing worsening multidimensional poverty and widening relative poverty gaps.

[3] This very positive outcome contrasts with the predicted decline in the Asian rural sector population of 0.2% per annum over the same period and dominates the slower forecast urban population growth of 0.7% per annum in the more developed regions of the world.

[4] While global spending on infrastructure and capital projects is expected to increase from US$ 4 tn in 2012 to US$ 9 tn by 2025, Asia's emerging economies' proportional share of global spending on infrastructure is expected to increase from 30% of global spending in 2012 to 48% by 2025 (Beyondbrics, 2014).

[5] Rapid urbanization places tremendous pressure on the environment, especially due to increase in particulate matter (PM) and carbon monoxide levels because of rapidly increasing industrial products and road transport. Of the world's most polluted 57 cities, around 60% are located in Asia. If European air quality standards are used as the benchmark, 67% of Asian cities fail to meet those standards compared to less than 11% of non-Asian cities (Wan and Wang, 2014).

## 1 Part I: The Dynamic Interplay of Internal Migration, Urbanization, and Poverty

Chapter 2 by Graeme Hugo comprehensively reviews the recent demographic patterns of urbanization in the Asia region. He distinguishes between two dimensions—urbanization, which refers to the increasing proportion of the population living in urban areas as opposed to urban growth, which is measured as the increase in the absolute numbers living in urban areas. Urbanization is highest for the countries of East Asia (the PRC's proportion of urbanized population was 54% in 2014), followed by Southeast Asia, with South Asian countries having lower ratios (India's urbanization is 32%). These proportions have been increasing over time, with the number of people in urban areas steadily increasing to nearly 1.7 billion in 2010. While the more recent focus has been on issues relating to megacities, Hugo acknowledges that small- to medium-sized cities are also contributing to urban growth, particularly in the PRC, India, and Indonesia. The growth is due to natural population increases, internal and international migration, and the reclassification of rural areas due to expanding urban zones. Hugo argues there is a clear link between urbanization, economic growth, and poverty reduction, although wide variations are experienced across the Asia region. He claims that while poverty rates are falling, the sizeable growth in urban populations means that urban poverty is becoming an important issue in Asia.

Riyana Miranti examines possible interdependencies between internal migration, urbanization, urban poverty, and inequality in Indonesia in Chap. 3. Indonesia has a high urbanization rate (over 50%), large intra-provincial migration, and a relatively low urban poverty rate, but it has relatively high urban inequality. Regressions are run on the 2008 wave of longitudinal microeconomic rural to urban migration in Indonesia (RUMiI) data. Migration status is used to proxy migration, and demographic characteristics of households (including labor market details of the household head) are used as controls. The estimates provide strong support for recent rural to urban migrants being more likely to be in the top quintile of the household per capita expenditure distribution and less likely to be below the poverty line expenditure level. Education, age, housing infrastructure, and job status are found to reduce poverty, while household size has a negative effect.

Four waves of Indonesian interprovincial migration data for the 5 yearly periods during 1995 to 2010 are then examined. The random effects estimates show that urbanization reduces urban poverty. Dual causality is also found with a positive relationship between urban poverty and urban inequality (this is further considered for India in Chap. 5). The study concludes that rural to urban migration reduces poverty in Indonesia with the implication that the authorities should formulate coordinated policies to reduce poverty and inequality by promoting access to urban infrastructure and education and reducing labor market barriers.

In Chap. 4, Xin Meng reports migration dynamics for the PRC where over 130 million people have moved to cities in the last 15 years. This migration is much larger and faster than that experienced in Europe and the United States during their

industrial revolutions. Ten to 20 million migrants with rural hukou migrated each year from 1998 to 2004. These increases, coupled with sustained strong economic growth, seem to indicate that the PRC was running out of surplus unskilled labor. However, Xin Meng disagrees with this deduction because unskilled migration represents 25% of the hukou labor force, which is less than 20% of the total labor force in the PRC. She argues that the significant official migration restrictions are the cause, making it more costly and risky for individuals to migrate, restricting family members to follow them, and increasing the likelihood of the migrants returning to their rural homes. These institutional restrictions to rural–urban migration, by reducing migration numbers and shortening the migration duration, have reduced the unskilled labor supply in urban areas. The resulting upward pressure on wages creates a bias away from labor toward capital-intensive industries. Ming argues that it is therefore necessary to increase employment opportunities in smaller cities and local towns and improve education in rural areas in order to encourage rural workers to migrate.

A linear probit model is estimated using the rural–urban migration in the PRC (RUMiC) survey data for the 3 years 2008 to 2010 (similar to the longitudinal survey data used by Riyana Miranti for Indonesia in Chap. 3). Using poverty measured in per capita income terms for migrant households, the regressions show they are less likely to be poor. However, using per capita expenditure as the poverty measure, the estimates show the reverse effect—poverty is approximately 1.5% higher for migrant households. This difference may be due to migrants working very hard to save for the short duration they are in the city. Since migrants are generally without their families (the average urban migrant household size is only around 1.5 people), savings may be remitted back home. Their expenditure is therefore expected to be lower than income. These positive findings between migration and poverty using expenditure measures contrast with Riyana Miranti's findings of reducing poverty for Indonesia using per capita expenditure data. The dynamic evidence relating poverty and migration is therefore ambiguous and influenced by the official policies restricting migration numbers and the duration of migration.

Wilson, Jayanthakumaran, and Verma's analysis in Chap. 5 focuses on urban migration, urban poverty (measured by the expenditure-based urban headcount ratio), and inequality in India. The time series analysis for four decades from 1982 to 2012 shows that migration to urban areas increases urban poverty nationally. The spatial estimates for 16 Indian states for the shorter period 2006–2011 reinforce the time series results. Migrant urbanization is found to increase urban poverty with a significant elasticity of around 0.7 or more.

The results also show that additional feedback effects are occurring between urban poverty and inequality, indicating an upward/downward spiral and, as was found for Indonesia in Chap. 2, the necessity to provide coordinated policies to reduce both urban poverty and inequality. These results are consistent with the expenditure findings for the PRC in Chap. 3.

To summarize, the conclusion from Part I is that there are strong dynamic links between internal migration, urbanization, urban poverty, and inequality, but these

links differ across the three countries. The mostly shorter-range internal migration and smaller rural to urban movements in Indonesia have helped reduce urban poverty. However, the official restrictions to internal migration in the PRC have had ambiguous effects on urban poverty. For India, internal migration to cities and towns that are relatively less urbanized compared to those of Indonesia and the PRC is associated with increasing urban poverty and inequality. The lessons here are that the dynamic interplays are important in Asia and that rural to urban migration is a necessary but not sufficient condition for reducing urban poverty.

## 2 Part II: Migration, Urbanization, and Poverty Alleviation

Given the complicated dynamics involved, the chapters in this section focus on the better-known positive effects of migration and urbanization in reducing urban poverty. The World Bank and the IMF (2013) argue that internal migration and urbanization are important to support efforts in reducing poverty and achieving the Millennium Development Goals (MDGs). With internal migration, many workers move from low-skilled jobs to working in higher value-added industries. These movements create new opportunities for skilled migrants, increasing wages and reducing poverty. Part II supports these traditional theories, showing that internal migration and urbanization have been mostly poverty reducing (Chaps. 6, and 7) and skilled migrants receive higher wages (Chaps. 8, and 9).

In Chap. 6, Endang Sugiyarto, Priya Deshingkar, and Andy McKay examine internal migration and poverty in Indonesia using the Indonesian Family Life Survey (IFLS) panel data for 2000 and 2008. They show that 28% of the population has migrated over a 7-year period, with the majority moving by themselves and locally within provinces. The most common causes of migration are for family reasons, followed by work and then school. Migration is more likely for older household members with higher education, while gender is not found to be a determining factor. Costs, distance, and locations are important determinants of internal migration.

Contrary to the common view, the authors find that only 8% of all migrants move from rural to urban areas, 40% rural to rural, 37% urban to urban, and 15% urban to rural. No matter what the movement type, poverty reduction among return migrants is always higher compared to current migrants. The authors find that 35% of "currently away" migrants are in the top per capita expenditure quintile compared to 19% of nonmigrants. This agrees with the findings for Indonesia in Chap. 3 of Part I. However, the poorer migrants move from rural to urban areas and are found to experience the least, if any, improvement in poverty. Chapter 7 by Nandini Mukherjee and Biswajit Chatterjee also shows a decline in poverty for India. The National Sample Survey (NSS) data for six rounds shows that urban poverty has fallen both at the national and state level in India since the 1990s. However, the authors find there are substantial differences across states and time, and the results do vary depending on the type of methodology used in estimating the urban poverty

line. Orissa (Odisha) was the only state that experienced no fall in poverty during these years. In comparison, the large and increasingly urbanized state of West Bengal experienced large falls in poverty, although there was an increase in inequality during this time, consistent with the findings on India in Chap. 5 of Part I. The fixed and random effects panel regressions reveal that the decline in urban poverty is significantly associated with increased urbanization, per capita public expenditure on education and health, and per capita industrial income.

Of the other determinants of urban income and poverty, the effects of urban–rural wages and their differentials are major. Collective bargaining, minimum wage laws, and efficiency wages in the urban formal sector widen income disparities between the urban formal–informal and rural–urban sectors and skilled–unskilled workers. In Chap. 8, Jajati Keshari Parida analyzes the migration-specific National Sample Survey (NSS) data for India for the years 2000 and 2008. The share of migrants in urban population increased from 33.3% in 1999–2000 to 35.5% in 2007–2008. This share is more than 40% in Maharashtra, Delhi, Haryana, Andhra Pradesh, Orissa, Chhattisgarh, and Uttarakhand. Small and medium cities are growing faster than the big cities. Chapter 11 identifies top 10 urban areas (cities) which received the highest rural to urban migration in order in 2001: Surat, Dhanbad, Nashik, Greater Mumbai, Kochi, Asansol, Jamshedpur, Delhi, Rajkot, and Patna. Bivariate probit regressions are used to simultaneously estimate the dual migration and workforce participation decisions. Labor force participation in India is affected by the level of technical education and is found to be the main determinant of rural to urban migration. The average wage of migrants is higher than that of nonmigrants across industries and occupations for regular salaried employment. This difference also applies to migrants in the higher wage distribution quintiles who are engaged in casual or informal employment, but the difference is not consistently higher across industries and occupations. All industries have average wages higher than in agriculture, which confirms the pull of workers from agriculture to other sectors. Decomposing the wage gap between migrants and nonmigrants shows that differences in productivity endowments like age, sex, and education levels are significant, explaining over 90% of the wage differentials between the two groups. These results are consistent with the analysis in Chap. 4 finding that migrants in the PRC work harder and obtain higher wage incomes.

The high incidence of poverty; increasing mean years of schooling; growing enrollments at higher, technical, and vocational education; and increasing number of migrant's labor force participation have implications on urban infrastructural facilities especially on urban housing/slums. Chapter 8 has some limitations by not explicitly analyzing the impact of rural–urban migration, with the implications on urban infrastructural facilities especially on urban housing/slums. Chapter 11 addresses this issue, indicating that about 18.78 million urban households are facing housing shortage and around 17.4% of urban households are living in slums in 2011.

In Chap. 9, Mohamed Marouani and Björn Nilsson examine the role of skills in increasing productivity. They show that the evolution of educational attainment among Malaysians, as a measure of human capital skills, has increased substantially in the last two decades. They highlight the large drop in numbers with only a pri-

mary education or less, coupled with an increase in the number of secondary and tertiary educated. This has coincided with a sixfold increase in the number of universities from 7 in 1990 to 42 in 2009 and the increase in vocational education polytechnics and community colleges.

The authors then examine the impact of education by developing a dynamic general equilibrium model. Detailed labor market characteristics include jobs across sectors and workers with different ages and skills defined according to education and fields of study. A microdata social accounting matrix with social security contributions and transfers is developed using an available 2005 input–output matrix and the 2007 Labor Force Survey (LFS). The model is simulated to consider, first, the possible effects of skill-biased technological change on wages and unemployment and, second, the consequences of affecting the supply of education in Malaysia. The counterfactual simulations show that skill-biased technological change increases skilled wages and reduces skilled unemployment, with the unskilled facing lower wages and higher unemployment. However, substantial expansion of higher education significantly reduces wage inequalities by limiting the increases in skilled wages. The simulations show that skill-biased technological change benefits the skilled labor sectors, provided it is coupled with open-door higher educational policies. Again, the findings here are in line with those of Chap. 4 for the PRC and Chap. 8 for India that migrants are better off because they tend to obtain higher wages.

The chapters in Part II, therefore, collectively indicate that internal migration and urbanization have led to declines in urban poverty mostly due to the traditional arguments that skilled migrants receive higher wages and income in formal and, to a lesser extent, informal employment. However, there is evidence for Indonesia that poorer, less skilled rural workers do not receive the same benefits from migrating to urban areas. This will be further considered, along with the case for the PRC, in the next section.

## 3 Part III: Polarization and Poverty Gaps

The chapters in Part III focus on the complications arising from internal migration and urbanization, particularly in terms of increasing multidimensional poverty and widening poverty gaps.

The Harris–Todaro model predicts that higher wages in urban areas induce rural–urban migration, which helps close the urban–rural wage gap. But such migration may lead to rising urban inequality when labor heterogeneity is taken into account and skilled migrants move to cities. The impact of migration on the wage of the unskilled migrants depends almost entirely on the magnitude to which skilled and unskilled workers are complements or substitutes. Such wage divergences are only a part of the story because urban migrants may invest in physical and riskier investments, and this will eventually influence on real average income and income

inequality of urban sector (Lucas, 1997). In reality, the effect of urban migration on income inequality is ambiguous.

Jing Yang and Pundarik Mukhopadhaya examine the dimensions of poverty in the PRC in Chap. 10. They use the China Health and Nutrition Survey (CHNS) longitudinal data for the years 2000 to 2011 to incorporate capability and social inclusion as additional poverty indicators. The four dimensions they take into account are income, health, education, and living standards, and the income poverty line is adjusted to include economic vulnerability and food insecurity. Until now, measures of poverty have been based on income in Chaps. 4, 8, and 9 or on consumption expenditure in Chaps. 3, 5, 6, and 7. This method helps identify not only different categories of the poor but also target resources and policies of poverty alleviation more accurately. The authors find that multidimensional poverty declined over the decade, but the decline has slowed since 2009. Including economic vulnerability and food insecurity reduces these falls, and using the $1.51 cutoff even increases the index. The rural–urban disparity for moderate poverty decreased prior to 2009 but has increased since then. The disparity for severe poverty is high for all the sample years.

Per capita income, health insurance, and the highest level of education are the major contributors to decreasing multidimensional poverty for urban dwellers. It is more difficult to determine the main contributors to reducing rural poverty, although improved toilet facilities and cooking fuels as well as per capita income and education appear important. For the rural poor, vulnerability to risk, particularly with income fluctuations, is very important. The analysis concludes that the rural–urban gap has narrowed in terms of the severity of multidimensional poverty but less so in terms of its intensity.

In Chap. 11, Sabyasachi Tripathi tests whether urban economic growth has been absolutely or relatively pro-poor in India. “Absolute pro-poor” is defined as the income of the poor increasing in absolute terms, while “relative pro-poor” is defined as the increase in income being at least the increase in mean expenditure. The data used to calculate the indices comes from the urban household monthly per capita consumer expenditure (MPCE) figures of the NSS for 2004, 2009, and 2011. The statistical evidence supports that India’s urban economic growth has been absolutely pro-poor but relatively anti-poor in this period.

This conclusion can be linked to Chap. 5, which shows evidence of increasing urban inequality in India. Given that most of the poverty reduction policies in India and the PRC are designed to target rural rather than urban poverty, these findings indicate a need to reorient policies to reduce poverty.

The final chapter is a study of the unskilled rural poor migrating to urban areas only to become part of the urban poor. Abu Hena Reza Hasan studies migrants who become rickshaw pullers in urban Dhaka, Bangladesh, and this can be considered as a case study for Chaps. 10, and 11 of Part III. Dhaka is one of the largest cities in the world. Since it lacks motorized public transport, human-pulled pedicabs are the primary mode of transport. These human rickshaws provide over half of the

estimated daily trips in the city for its 15 million inhabitants. The lack of any required skills reduces barriers to entry for workers from the rural sector, and there has been a large increase in these urban workers.

The researcher completed 127 survey questionnaires with the rickshaw pullers in Dhaka during 2014. Nearly all of those interviewed migrated to Dhaka to become rickshaw pullers—with two-thirds previously agricultural workers—and came without their families. Regression analysis shows their expected income is two-thirds higher than for employment at home outside Dhaka and marginally higher than that for other employment in Dhaka. The calculated present value benefit–cost ratio is 1.37 for a rickshaw puller who migrated with his family and only 1.19 for migration without family. The survey found that one-third of the rickshaw pullers were not able to increase wealth, and a quarter had only cash savings. The lack of ability to accumulate assets over the short physically arduous working period diminishes their ability to get out of poverty.

The central thread of the chapters in Part III is the complexities involved in examining urban poverty in the PRC, India, and Bangladesh. Multidimensional poverty has increased since the global financial crisis (GFC). The rural–urban gap for severe poverty also remained high for this period, and the rural poor remain vulnerable to risk. India's urban economic growth is found to be pro-poor in absolute income changes but anti-poor in relative income terms for the same period. For the case study of Bangladesh, the induced migration to the big city of Dhaka transforms the rural poor into urban poor, caught in a poverty trap with worsening urban working and living conditions.

## 4 Concluding Remarks

The recent demographic transitions in Asia in the form of spectacularly increasing internal migration and urbanization are unprecedented in history, and as Hugo says in Chap. 2, poverty is fast becoming an urban issue. Skilled workers in urban areas and migrants returning home are quickly moving out of poverty. So while poverty is falling and winners are now being identified, there are those in urban areas who are being left behind. The new challenge is for research to identify the newly emerging urban disadvantaged and provide policies to assist them out of poverty. Data remains a problem, but more importantly there is a need for new methodologies relating to the complex and evolving dynamic interrelationships in urban areas. The examination of one or two issues in isolation must give way to a system-wide approach based on innovative concepts and measures of poverty. The chapters presented here are an attempt to start this process of enquiry.

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# Chapter 3
# Examining the Interdependencies Between Urbanization, Internal Migration, Urban Poverty, and Inequality: Evidence from Indonesia

**Riyana Miranti**

**Keywords** Poverty · Inequality · Urbanization · Internal migration

**JEL Classification** R11 · R23 · O15

## 1 Introduction

The Global Monitoring Report 2013 published by the World Bank and the International Monetary Fund (IMF) has put a special focus on internal migration research, particularly on the issues of rural–urban dynamics, urbanization, and its relationship with progress of the Millennium Development Goals (MDGs). The report indicates that urbanization in the developing countries has been very fast, with around half of the developing world population currently living in urban areas. This report argues that urbanization has been a significant determinant of poverty reduction and progress in other MDGs (World Bank and IMF 2013). Countries that experience a higher rate of urbanization (e.g., the People's Republic of China [PRC] and countries in East Asia and Latin America) have lowered their poverty rates, calculated by the international standard of less than US$ 1.25 per day measured at

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2005 PPP. This is better compared to countries which have experienced lower rates of urbanization, such as those in South Asia and Africa (World Bank and IMF 2013).

The country of focus here, Indonesia, has also experienced rapid urbanization, with the growth of urban population being more than 4% per year during 1970–2010. This is faster than other Asian countries such as India, the Philippines, Thailand, and Viet Nam, which experienced increases of around 3% in the urbanization rate per year, during the same period. According to the latest 2010 Census, almost half of the Indonesian population lives in urban areas. The growth of urban population has been faster than the growth of total population of around 1.7% per year between the two Indonesian Population Censuses, 2000 and 2010. Urbanization and the development of urban areas in Indonesia have been concentrated in the larger cities, particularly in the Greater Jakarta area, which covers Jakarta and its neighborhoods of Bogor, Tangerang, and Bekasi (Firman et al. 2007).

There have been two interesting phenomena that have accompanied the rapid urbanization process in Indonesia since the early 2000s—Indonesia's poverty reduction record has been impressive, while at the same time inequality has been increasing. Although the economy grew more slowly at 5–6% per year after 2001 (compared to the period prior to the crisis with the annual growth of 7% per year), the poverty rate has still been declining at around 3.7% per year during the same period (although this rate was also slower compared to the period 1990–1996 when the poverty rate declined by 4.9% annually, as discussed in Miranti et al. 2013). However, inequality in Indonesia has been increasing from a relatively low and stable Gini coefficient of 0.33 in early 2000 to a high of 0.41 since 2011, a level that has never been experienced in Indonesia before.

As argued by the World Bank and IMF (2013), the role of urbanization is important to support efforts in reducing poverty. With urbanization, a significant proportion of the population shifts out from work in the agricultural sector to work in sectors with higher value added, such as in the labor-intensive manufacturing sector. This sectoral transformation has created new opportunities and may increase the aggregate demand, fostering economic growth and reducing poverty (Christiaensen et al. 2013). By the same token, the relationship between urbanization and inequality has been firmly acknowledged in the literature with Kuznets' (1955) seminal chapter. Kuznets argued the existence of an inverted U-shaped inequality curve pointing out that as a country develops, inequality will increase before it falls after a certain income level. Further, the discussion on urbanization cannot be separated from the discussion of internal migration, particularly the rural–urban migration (Firman et al. 2007).

The overall objective of this chapter is to analyze the potential interdependencies between urbanization, urban poverty, urban inequality, and internal migration in Indonesia. So far, the literature has discussed factors associated with poverty, inequality, urbanization, or migration separately, despite the potential for these four variables to interact with each other. The discussion about how these four variables interact is still missing, which may be due to data limitations or the complexity of the issue. For example, despite the proliferation of migration studies, very few of these have examined the relationships between migration, poverty, and inequality

comprehensively. International migration has featured in the discussions on poverty usually only in terms of remittances, and this has been discussed as a determinant of poverty reduction in the cross-country literature (see Adams and Page 2003, 2005) but not within a country.[1] Nevertheless, Miranti (2007) has investigated the relationship between interprovincial migration and regional poverty in Indonesia. The study finds that interprovincial migration has positive and significant effects on economic growth that will transfer indirectly to reduce poverty. Thus, the contribution of this chapter is to fill the gap in the literature to explore whether those interdependencies exist between the four key variables of interest.

The analysis will be based on two sets of data, the macro-provincial-level data mainly collected by the Central Board of Statistics of Indonesia (Badan Pusat Statistik [BPS]) and the Rural–Urban Migration in Indonesia (RUMiI) data for the microlevel or household analysis. This micro-data is, to our knowledge, the most comprehensive data that contains information on rural–urban migration, activities of the migrants, and their social and economic characteristics.

The rest of the chapter is organized as follows. The next section discusses the patterns and trends of the four key variables: poverty, inequality, urbanization, and internal migration. This will include some regional analysis, such as urban–rural disaggregation and analysis at the provincial level. Section 3 presents a literature review of these variables and their possible linkages. Section 4 presents the data, approach used, and methodology, while Sect. 5 outlines the empirical results. Finally, Sect. 6 summarizes the findings and presents the conclusions and policy implications.

## 2 Current Trends and Patterns of Poverty, Inequality, Urbanization, and Internal Migration

This section discusses the trends and patterns of these four variables of interest. Each is considered in turn.

### *2.1 Poverty*

Figure 3.1 shows the trend in poverty headcount rates, starting just before the Asian financial crisis in 1996 to the latest data we have in 2014. The trend shows that the poverty rate has been continuing to decline, for both urban and rural areas, except for an increase in the 2006 when the reduction in the fuel subsidy increased fuel prices, which further led to price rises in rice and other commodities. Figure 3.1 also shows

[1] There are three types of migration or population mobility that are usually a focus of the literature, rural–rural, rural–urban, and international migration, although urban–urban and urban–rural migrations are also worthy topics for discussion.

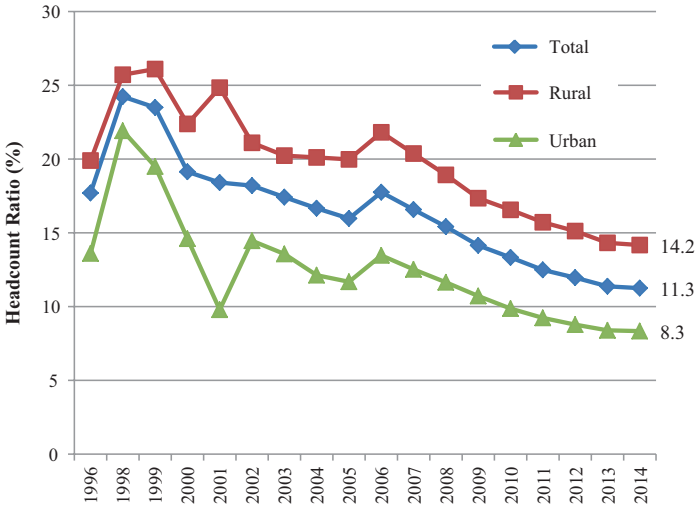


**Fig. 3.1** Trend in poverty, 1996–2014. (Source: BPS, SUSENAS, various years)

that the gap between the urban and rural areas continues, with urban areas recording lower poverty rates than rural areas. The poor are also concentrated in rural areas, with 63% of the poor population (17.8 million) living in rural areas, based on the 2014 data. Despite this, there are still more than 10.5 million poor people living in urban areas, which is only around 1 million less than it was 10 years ago.

Economic growth has been considered as the driver behind this rapid poverty decline. However, it is also worth noting that after the period of the economic crisis, Indonesia has also embarked on a direct poverty alleviation strategy, which covers three clusters of poverty programs and includes programs such as the Unconditional and Conditional Cash Transfers (*Bantuan Langsung Tunai*, BLT, and *Program Keluarga Harapan*, PKH) and the National Program for Community Empowerment (*Program Nasional Pemberdayaan Mandiri*, PNPM) (see Manning and Sumarto 2011; Manning and Miranti 2015; Miranti et al. 2013 for discussions about the program, issues and challenges).

One should also note that although economic growth has been pro-poor and poverty rates have been declining at the national level, there are still significant disparities in the provincial poverty rates. The province of Papua has a high incidence of poverty despite having the highest income per capita (30.5%) in 2014. This highlights the fact that provincial poverty figures may not be consistent with economic indicators and that high regional gross domestic products may not necessarily translate into improving the welfare of the respective provincial populations. Nevertheless, it is interesting that the poverty rate in urban Papua was low at 4.5%; meaning for this province, poverty is more of a rural phenomenon. Table 3.1 presents the top 10 provinces in Indonesia in 2014 (the latest data) where both total and urban poverty rates are high.

**Table 3.1** The top 10 provinces with high urban and total poverty rates

| | | Poverty rate 1996 (%) | | Poverty rate 2014 (%) | | Change per annum (%) | |
|---|---|---|---|---|---|---|---|
| Rank in 2014 | Province | Urban | Total | Urban | Total | Urban | Total |
| 1 | West Nusa Tenggara | 32.42 | 31.97 | 18.54 | 17.25 | −2.38 | −2.56 |
| 2 | Bengkulu | 22.79 | 16.69 | 18.22 | 17.48 | −1.11 | 0.26 |
| 3 | DI Yogyakarta | 19.81 | 18.43 | 13.81 | 15.00 | −1.68 | −1.03 |
| 4 | South Sumatra | 12.07 | 15.89 | 12.93 | 13.91 | 0.40 | −0.69 |
| 5 | Central Java | 20.67 | 21.61 | 12.68 | 14.46 | −2.15 | −1.84 |
| 6 | Aceh | 7.17 | 12.72 | 11.76 | 18.05 | 3.56 | 2.33 |
| 7 | Lampung | 23.88 | 25.59 | 11.08 | 14.28 | −2.98 | −2.46 |
| 8 | East Nusa Tenggara | 26.00 | 38.89 | 10.23 | 19.82 | −3.37 | −2.72 |
| 9 | Jambi | 20.46 | 14.84 | 9.85 | 7.92 | −2.88 | −2.59 |
| 10 | Central Java | 14.87 | 22.31 | 9.77 | 13.93 | −1.91 | −2.09 |
| | **Indonesia** | **13.63** | **17.65** | **8.34** | **11.25** | **−2.16** | **−2.01** |

Source: BPS, SUSENAS, various years

It is interesting that only two out of the ten provinces in the top 10 are located in Eastern Indonesia (West and East Nusa Tenggara), while the remaining are located in the West (Java and Sumatra), which is considered to be more developed. Two provinces in Table 3.1 (South Sumatra and Aceh) have actually experienced an increase in urban poverty. Further, despite urban poverty rate in West Nusa Tenggara being the highest in terms of annual changes, it seems this province has been catching up with 2.4% poverty reduction per year, higher than the national average (see Table 3.1).

## *2.2 Inequality*

Figure 3.2 shows the trend of Gini coefficients over the period 1996–2013. While poverty has been declining over this time, it is clear that there has been a tendency for inequality to be increasing during this period. This is a national phenomenon across urban and rural areas (Miranti et al. 2013; Yusuf et al. 2014).

Figure 3.2 also shows that urban inequality is mirroring total inequality and inequality has been rising faster in urban than in rural areas (which in fact experienced a decline during 2011–2013).[2] This may be due to the increasing wages of the formal sector, which affects the top of the income distribution, as there has been increasing demand for skilled workers and consequently the presence of a skill premium. In contrast, at the bottom of the income distribution, the slow growth in the blue-collar workers has hindered the increase in wages among the poor (Manning

[2] World Bank (2013) and Manning and Miranti (2015) have argued that several factors are behind this increasing inequality, including fiscal policy, which has been less equalizing in comparison with other countries.

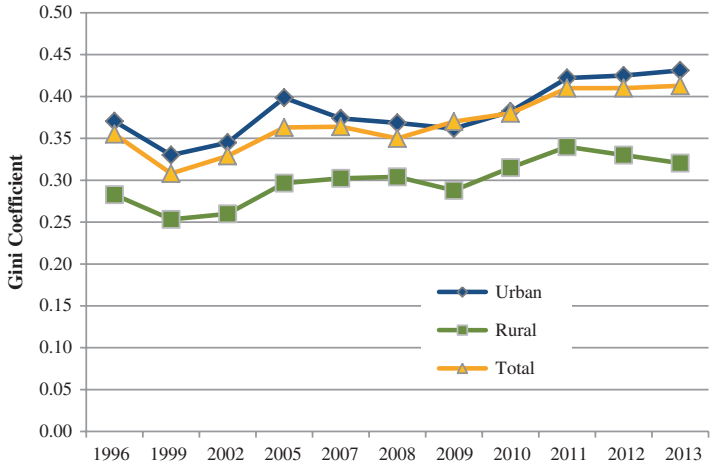


**Fig. 3.2** Trend in inequality, 1996–2013. (Source: SUSENAS, various years)

**Table 3.2** The top 10 provinces with high urban and total inequality

| | | Gini index 1996 | | Gini index 2013 | | Change per year (%) | |
|---|---|---|---|---|---|---|---|
| Rank in 2013 | Province | Urban | Total | Urban | Total | Urban | Total |
| 1 | Southeast Sulawesi | 0.34 | 0.32 | 0.46 | 0.43 | 2.01 | 1.82 |
| 2 | DI Yogyakarta | 0.36 | 0.36 | 0.45 | 0.44 | 1.33 | 1.21 |
| 3 | Central Sulawesi | 0.31 | 0.31 | 0.45 | 0.41 | 2.40 | 1.72 |
| 4 | South Sulawesi | 0.32 | 0.33 | 0.44 | 0.43 | 2.16 | 1.63 |
| 5 | West Kalimantan | 0.29 | 0.31 | 0.44 | 0.40 | 2.99 | 1.57 |
| 6 | DKI Jakarta | 0.38 | 0.38 | 0.43 | 0.43 | 0.82 | 0.82 |
| 7 | Bengkulu | 0.28 | 0.28 | 0.43 | 0.39 | 3.04 | 2.01 |
| 8 | West Sulawesi | | | 0.43 | 0.35 | | |
| 9 | North Sulawesi | 0.32 | 0.35 | 0.42 | 0.42 | 1.73 | 1.11 |
| 10 | West Java | 0.37 | 0.36 | 0.42 | 0.41 | 0.82 | 0.71 |
| | **Indonesia** | **0.37** | **0.36** | **0.43** | **0.41** | **0.91** | **0.76** |

Source: BPS, SUSENAS, various years

and Miranti 2015). Further, wages in the agricultural sector in rural areas have also remained flat, particularly during the past decade, contributing to the gap between urban and rural areas.

In terms of regional inequality based on the latest data we have in 2013, surprisingly, provinces with high urban and total inequality are located in Sulawesi. Indeed, all of these five provinces are in the top 10 of provinces with high urban and total inequality. It is not surprising that DKI Jakarta, the capital city, records high inequality (see Table 3.2). Nevertheless, these provinces (and also West Java) have experienced a lower increase in inequality per year at 0.8% compared with other provinces in the top 10 that record more than 1.3% increase in the Gini index per year.

## 2.3 Urbanization

The speed of urbanization in Indonesia has been fast. By 2010, almost half of the population in Indonesia lived in urban areas, and it is predicted to increase to two-thirds of the population by 2035. Figure 3.3 shows that North Sumatra and Banten (which are included in the RUMiI data) have recorded high urbanization rates, which are higher than the national average and are expected to reach an urbanization rate of around 60% or more by 2035.[3]

Skeldon (1990, 1997) has proposed six stages of mobility transition when analyzing the migration pattern in developing countries. A pre-transitional society is followed by early transitional and then intermediate transitional, late transitional, early advanced, advanced, and, finally, late advanced society. Chotib (2002) has argued that if the urbanization rate has achieved 50%, this means the area has been close to the early advanced society. Looking at the data in 2010, Indonesia may have been close to the stage of early advanced society. Further, Table 3.3 displays the top 10 provinces with high urbanization rates. There are three main observations: (i) the high urbanization areas are concentrated in Western Indonesia, particularly in Java

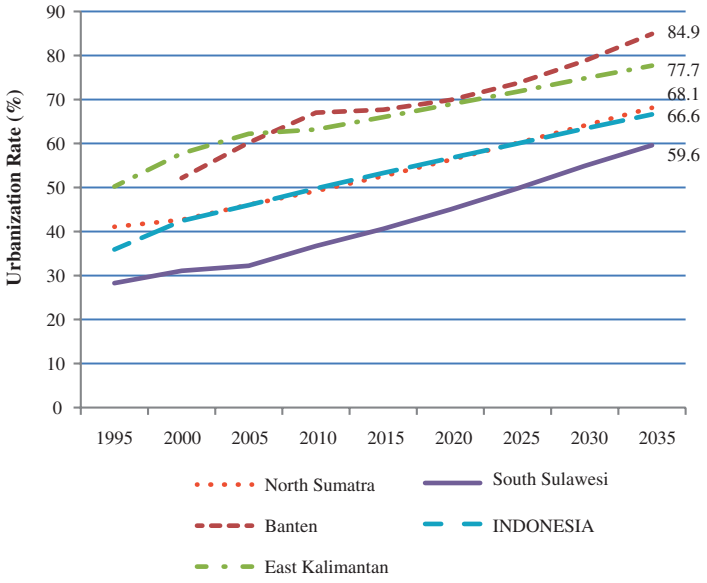


**Fig. 3.3** Trend in urbanization, 1995–2035. (Source: BPS)
Note: Figures for 2015–2035 are predicted figures

[3] The BPS (1980, 1990, and 2000) defines an Indonesian locality as urban if it fulfills the following characteristics: "(i) having a population density of 5000 people or more per square kilometer; (ii) having 25% or less of households working in the agricultural sector; (iii) having eight or more kinds of urban facilities"(Firman 2004, p. 425).

**Table 3.3** The top 10 provinces with high urbanization rate

| Rank in 2010 | Province | 1995 | 2010 | Change p.a. (%) |
|---|---|---|---|---|
| 1 | DKI Jakarta | 100 | 100 | 0.00 |
| 2 | Riau Islands | | 82.8 | |
| 3 | Banten | | 67 | |
| 4 | DI Yogyakarta | 58.05 | 66.4 | 0.96 |
| 5 | West Java | 42.69 | 65.7 | 3.59 |
| 6 | East Kalimantan | 50.22 | 63.2 | 1.72 |
| 7 | Bali | 34.31 | 60.2 | 5.03 |
| 8 | North Sumatra | 41.09 | 49.2 | 1.32 |
| 9 | Bangka Belitung | | 49.2 | |
| 10 | East Java | 27.43 | 47.6 | 4.90 |
| | **Indonesia** | 35.91 | 49.8 | 2.58 |

Source: BPS

and Sumatra provinces, with the exception of East Kalimantan; (ii) the urbanization rate is very high—with the top 7 recording more than 60% urbanization rates; and (iii) three of the top 10 provinces are new provinces that were formed after the decentralization period.

Nevertheless, one should keep in mind that there are three factors that influence urbanization. They are natural population increase, rural–urban migration, and reclassification (Firman et al. 2007; Gardiner 1997). In the case of Indonesia, it is important to take into account the reclassification of rural to urban areas as Gardiner (1997) explained that reclassification contributed to the high urban growth rate of 35% in 1980–1990.

## *2.4 Internal Migration*

The most common type of internal migration discussed in the literature is rural–urban migration and interprovincial migration. Due to the nonavailability of long series rural–urban migration data, this subsection only discusses interprovincial migration.

The literature has discussed several types of migration based on reasons for migrating in Indonesia. The types of migration basically cover (i) economic-induced migration, (ii) education-induced migration, and (iii) migration for social and cultural reasons (see, e.g., Miranti 2007, 2013 for more details on interprovincial migration).

Figure 3.4 shows a comparison of the net interprovincial migration rates for 1995 and 2010. Positive net migration happens when in-migration to a province is higher than out-migration from that particular province, while negative out-migration is recorded when out-migration is higher than in-migration. Ordering the provinces based on the rank of net migration rates in 2010, the Outer Islands or Eastern Indonesia provinces mostly recorded a positive net migration rate, with an increase in the rate

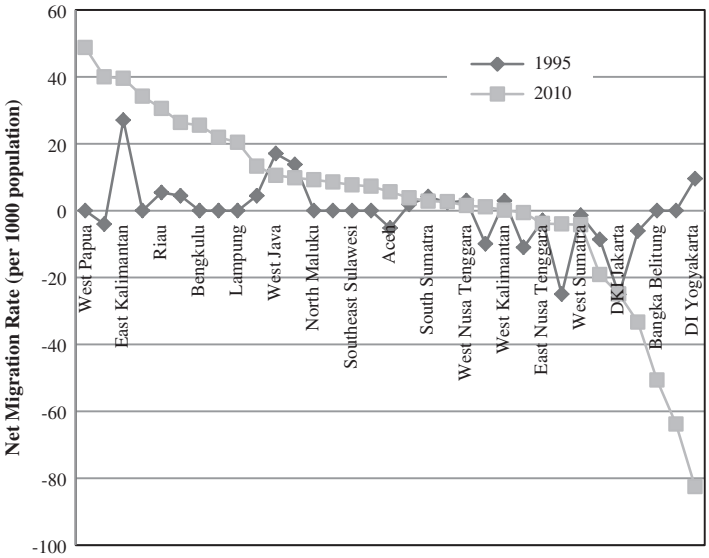


**Fig. 3.4** Net interprovincial migration rates (per 1000 population), 1995–2010. (Source: Indonesian Population Census 2010 and Intercensal Census 1995)

compared with that in 1995. These include the rich natural resource provinces such as East Kalimantan, Riau, and Aceh, which attract relatively more skilled migrants to the extraction and processing sites of natural resources such as oil and gas, other minerals, and palm oil. People also moved to the more sparsely populated Outer Islands such as Kalimantan because of the rapid development of the palm oil sector, which was labor-intensive and provided employment opportunities (Casson 2000).

Jakarta recorded a negative net migration rate, which indicates the mobility of people who moved to West Java, especially to the nearby municipalities (Bogor, Tangerang, and Bekasi) but still commute to Jakarta to work. It is also interesting to observe that Yogyakarta, which is famously called a student city (Kota Pelajar), recorded negative net migration. Yogyakarta also ranks among the top 10 provinces with urban poverty, urban inequality, and high urbanization rates.

The preceding discussions reveal some interesting patterns and potential linkages between urbanization, urban poverty, urban inequality, and internal migration resulting from the development process.

## 3 Literature Review

To understand the link between poverty, inequality, urbanization, and internal migration, one should understand the determinants and factors associated with each of the variables and whether the links between each of the variables have been discussed in the literature.

The literature on the determinants of poverty, including empirical studies, has been abundant (see the literature review in Miranti 2007). It includes discussions on the impact of economic growth on poverty and the links between poverty and inequality.

Ravallion et al. (2007) have also studied the links between urbanization and claimed that urbanization is important for poverty reduction. Christiaensen et al. (2013) further proposed the mechanisms by which urbanization affects the speed of poverty reduction, which is not necessarily limited to urban poverty. These mechanisms are as follows. First, it is through the process of agglomeration economies that urban concentration can create economic growth and employment. Second, through the role of externalities, the production network is located close to not only its suppliers but also service providers and consumers. Third, rural off-farm employment facilitates the flow of inputs, goods, and services with urban areas, potentially contributing to declining poverty in rural areas. Fourth, remittances through urbanization (via rural–urban migration) play a potentially effective role in poverty reduction.

On reverse causality, the theory on the relationship between urbanization and economic development has been well developed. This includes the seminal chapter of Kuznets' (1955) theory. Sagala et al. (2014) examine the link between urbanization and expenditure inequality in Indonesia using SUSENAS data to test the Kuznets hypothesis. They find that the inverted U-shaped hypothesis exists in both of their inequality estimates measured by the Theil index and the Gini coefficient. They also argue that inequality will reach its peak at an urbanization rate of around 46–50%. As urbanization rate in Indonesia has achieved 50%, this means that Indonesia has achieved the peak urbanization rate.

On the other hand, to the best of our knowledge, the discussion on the determinants of urbanization has been limited. For example, Hofmann and Wan (2013) focused on the potential impact of the growth of per capita GDP, structural transformation (industrialization), and knowledge spillovers (education) in determining urbanization. Applying OLS estimation using cross-country data and acknowledging the potential dual causality between urbanization and GDP growth, they find that the direction of effect is more likely from economic growth to urbanization rather than the opposite, as has been proposed by the World Bank and IMF (2013). They also find a positive impact of education on the urbanization rate and a significant positive impact of industrialization (measured by the proportion of nonagriculture to the total GDP) on urbanization. Firman et al. (2007) also argue that the services sector, which tends to be concentrated in large cities, is the driving factor behind urbanization and economic development as the growth of this service sector is supported by the availability of urban utilities such as water supply and electricity.

Having discussed urbanization, what does the literature say about migration or population mobility? The push–pull migration model in the neoclassical theory of migration argues that labor mobility aims to improve income and wealth and that it is a selective process (Sjaastad 1962; Greenwood 1975). The two most significant

reasons for the decision to migrate are the income differential between the area of origin and area of destination and also the interaction of these with individual demographic and socioeconomic characteristics such as age, gender, and education (Harris and Todaro 1970; Fields 1982). However, the decision to migrate has since shifted to the family (Mincer 1978), and migration is also considered as human capital migration (Schultz 1961; Becker 1962). Recent literature has extended migration studies within the context of social capital (de Haas 2010).

Miranti (2007, 2010) has argued that the link between migration and poverty is ambiguous and depends on the role of the labor market. Using the example of interprovincial migration in Indonesia, she differentiates the roles of in-migration and out-migration in relation to poverty, directly or indirectly through economic growth, as follows:

In-migration (potential impact on the destination provinces)

- *Direct effect*. In-migration is expected to have a negative association with poverty if migrants have a higher educational level than the population in the destination region and, therefore, they have a higher opportunity of working in activities that give higher returns.
- *Indirect effect*. The assumption is that in-migration augments labor supply with increasing capital or/and human capital in destination areas and, therefore, migration contributes to economic growth in these regions, which is, in turn, negatively associated with poverty.

Out-migration (potential impact on the origin provinces)

- *Direct effect*. Out-migration is expected to have a positive relationship with poverty if out-migrants usually have higher educational levels than the population in the areas of origin and, therefore, a higher income status than those who remain behind.
- *Indirect effect*. The assumption is that migration contracts the labor supply because of a brain drain, but the possible offsetting impact of remittances contributes to an ambiguous impact from out-migration on growth in the regions of origin.

Further, Van Lottum and Marks (2012) have estimated the determinants of internal migration in Indonesia using a longer time series data spanning 1930–2000. By applying a gravity model, they find the capital city of Jakarta has a strong impact on the direction and the size of migration flows, while, in contrast, the wage differentials between the original and destination provinces are not significant.

At the level of micro-data analysis, in line with the literature that discusses migration as a family or household decision, the literature has highlighted the interplay between migration status, individual characteristics, household characteristics, and residential characteristics with poverty and other socioeconomic and well-being measures (see, e.g., Meng et al. 2010 for the Rural–Urban Migration project in the PRC and Indonesia).

## 4 Data, Approach, and Methodology

Two approaches are adopted in the analysis in this chapter. First, the quantitative analysis of the relationship between the poverty, inequality, urbanization, and internal migration in Indonesia uses RUMiI data, which is part of the output of the Rural–Urban Migration in China and Indonesia (RUMiCI) project hosted by the Australian National University (ANU). The data is longitudinal, conducted through four waves (2008, 2009, 2010, and 2011), and surveyed in four provinces in Indonesia that recorded major enclaves of rural–urban migrants. These provinces are North Sumatra, Banten, East Kalimantan, and South Sulawesi.[4] Rural–urban migrants or the migration status is differentiated into (i) recent migrant (less than 5 years), (ii) long-term migrant (at least 5 years), and (iii) local nonmigrants.

The advantage of using this micro-data is that it allows the analysis of diversity of internal migrants and the changes in their well-being. Nevertheless, at this stage, for the purpose of this chapter, utilizing the longitudinal characteristic of the data may not be necessary, and instead the focus was on the early wave in 2008 where the economic situation was considered normal with no major economic shocks. The level of inequality proxied by the Gini coefficient in this particular year was also stable, while it started increasing in 2009 and reached 0.41 in 2011. Two regressions using the logit econometric technique are carried out to estimate (i) the likelihood to be in the bottom 20% of expenditure per capita and (ii) the top 20% of expenditure per capita (from relative poverty–inequality point of view) at the household level. This is in line with the literature which argues that migration is a household decision. Resosudarmo et al. (2010) have estimated the likelihood of being poor defined using absolute poverty line and probit model on the same dataset. A slightly different technique—the logit model—which may be easier to interpret is used. More detailed explanatory variables in the estimation, such as labor market industry and status, and include housing conditions to represent access to basic facilities/infrastructure, are incorporated.

Urbanization/internal migration are proxied by the migration status in the RUMiI data. Other explanatory variables include the demographic characteristics of the household heads, labor market characteristics of the household heads (industry and employment status), and housing condition (sanitation). The marginal effects of the variables of interest from these regressions are estimated and presented in the next section.

The second quantitative analysis of the relationship between urban poverty, urban inequality, urbanization, and internal migration in Indonesia uses panel data at the provincial level from 1995 to 2010. The dependent variable of the main equation is urban poverty. At this macro-level analysis, interprovincial migration data as proxy of internal migration is used since the rural–urban migration data is not available. The urbanization and interprovincial migration data are sourced from SUPAS 1995 and 2005 and the Indonesian Population Census 2000 and 2010, while urban

[4] These locations should be kept in mind when interpreting the findings.

poverty and urban inequality data are more frequently calculated based on the three yearly consumption modules of the household SUSENAS survey.[5] Therefore, we can only include the 2010 data as the latest data for the analysis. The discussion on migration will only be limited to recent migration, which covers those whose current residence is different from their place of residence 5 years ago.

Other data collection is sourced from the Indonesia BPS (*Badan Pusat Statistik*), including data taken from SAKERNAS (labor force survey) and *Statistics Indonesia*. In addition, some assembled data from the CEIC Indonesia Premium Database is also included.

Taking into account the high degree of heterogeneity across provinces in Indonesia, it is therefore important that an econometric technique for panel data is applied. The data is constructed as an unbalanced panel due to, first, some missing values—a result of the creation of new provinces, particularly after the application of the decentralization policy in 2001. In 1995, there were 26 provinces, which expanded to 33 provinces by 2010. Second, the data is unbalanced because, SUSENAS being the main source of data for urban mean expenditure per capita, data was not collected in several provinces due to social conflicts or natural disasters (such as the tsunami in Aceh).

Urbanization is measured by the proportion of population living in urban areas, and the regressions also include other explanatory variables discussed in the literature to be associated with poverty. The best, suitable, and available proxy for each variable is chosen. These variables particularly include the role of the labor market such as provincial minimum wages; provision of physical infrastructure, which is proxied by percentage of households with state electricity (which could also represent the energy access) and education status of the population (educational attainment or net enrollment ratios at junior high school level); the size of the agricultural sector; and economic growth. Since this data is not published with urban–rural disaggregation, this limitation needs to be kept in mind when interpreting the results. Other variables were also considered important, but they could not be included in the analysis due to data unavailability. These include climate impact and data on wage disparities/convergence. There are also other limitations to the data including the fact that urbanization may increase as a result of changing classification from rural to urban areas as discussed earlier. The short panel data may also not be able to fully capture the interdependencies properly.

## *4.1 Empirical Models of Interdependencies*

Since the focus of the chapter is the interdependencies between urban poverty, urban inequality, urbanization, and internal provincial migration, the estimations are carried out by acknowledging the dual causality between urban poverty as the dependent variable and urban inequality, urbanization, and internal provincial

[5] Some are calculated by special data request from the Indonesia BPS.

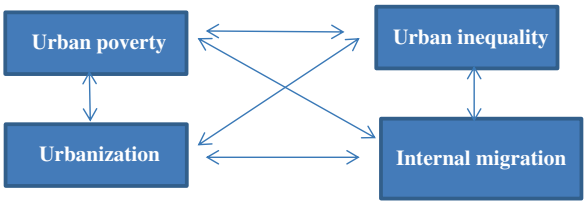


**Fig. 3.5** Potential interdependencies between urban poverty, urbanization, urban inequality, and internal migration. (Source: Author's summary)

migration (and economic growth) as the endogenous variables, with other variables assumed as exogenous. Our hypothesis is that dual causality between these four key variables is present as indicated in Fig. 3.5.

We aim to carefully examine the interdependencies with simultaneous equations, in which each estimation will give the relative responsiveness of each variable to the other variables. However, we start with the simple panel data first without acknowledging the interdependency issue.[6]

*Without interdependencies:* These regressions are estimated separately using either the fixed effects or the random effects estimation of panel data.

1. Urban poverty equation

$$\ln\ urbanpoverty_{i,t} = \gamma_0 + \gamma_1 \ln\ urbangini_{i,t} + \gamma_2 prop\_urban_{i,t} + \gamma_3 netmig\_rate_{i,t} + \gamma_4 economic\_growth_{i,t} + \gamma_5 \ln\ urban\exp\_cap_{i,t} + \gamma_6 prop\_electricity_{i,t} + \gamma_7 \ln\min\_wage_{i,t} + \gamma_8 \ln\ ner\_junhigh_{i,t} + \delta_i + \varepsilon_{i,t}$$

2. Urban inequality equation

$$\ln urbangini_{i,t} = \beta_0 + \beta_1 \ln urbanpoverty_{i,t} + \beta_2 prop\_urban_{i,t} + \beta_3 netmig\_rate_{i,t} + \beta_4 economic\_growth_{i,t} + \beta_5 \ln urban\exp\_cap_{i,t} + \beta_6 prop\_electricity_{i,t} + \beta_7 \ln\min\_wage_{i,t} + \beta_8 \ln ner\_junhigh_{i,t} + \beta_9 non\_agri + \delta_i + \varepsilon_{i,t}$$

3. Urbanization equation

$$prop\_urban_{i,t} = \lambda_0 + \lambda_1 \ln urbanpoveny_{i,t} + \lambda_2 \ln urbangini_{i,t} + \lambda_3 netmig\_rate_{i,t} + \lambda_4 economic\_gowth_{i,t} + \lambda_5 \ln urban\exp\_cap_{i,t} + \lambda_6 prop\_electricity_{i,t} + \lambda_7 \ln\min\_wage_{i,t} + \lambda_8 \ln ner\_junhigh_{i,t} + \lambda_9 non\_agri + \delta_i + \varepsilon_{i,t}$$

[6] We also try the Arellano–Bond estimation using the xtabond2, which is suitable for analysis of dynamic panel data with small *T* but larger *N*. However, our data is too short for this type of estimation for three reasons. First, we will lose much information due to the inclusion of lags. Second, there is also a requirement to limit the number of endogenous variables to be less than the total observations in each group. Third, the Arellano–Bond estimation does not provide the results of the first stage of the equation, so it does not reveal the interdependencies.

4. Interprovincial migration equation

$$netmig\_rate_{i,t} = \rho_0 + \rho_1 \ln urbanpoverty_{i,t} + \rho_2 \ln urbangini_{i,t} + \rho_3 prop\_urban_{i,t} + \rho_4 economic\_gowth + \rho_5 \ln urban \exp\_cap_{i,t} + \rho_6 prop\_electricity_{i,t} + \rho_7 \ln \min\_wage_{i,t} + \rho_8 \ln ner\_junhigh_{i,t} + \rho_9 non\_agri + \delta_i + \varepsilon_{i,t}$$

*With interdependencies:* We carefully examined various strategies to achieve the best estimation, investigating whether the interdependencies between urban poverty and particularly urban inequality, urbanization, and internal migration exist. The main argument in this chapter can be summarized as follows: whether each of the variables of interest affects each other simultaneously. To incorporate dual causality into the model, we use the instrumental variable estimation technique, in which the 5-year lag of the endogenous variables and the 5-year lag of the incidence of urban poverty are used as the instruments for the first-step estimations. As the literature also indicates that economic growth affects poverty reduction and vice versa, we also include this as the endogenous variable. Size of the nonagricultural sector is included as an additional instrument, particularly to represent the degree of structural transformation in each province, which the literature points out is associated with urbanization. We assume that the instruments are not correlated with the error terms in the main equation as the instruments used also include 5-year lags of the endogenous variables. Due to the nature of the data, which covers only a short period, time dummy variables are not included in the analysis as they are highly correlated with the explanatory variables.

We use panel data estimation, fixed effects, or generalized least squares random effects—two-stage least squares—and use the Hausman test to decide the preference.

5. Urban inequality equation

$$\ln urbangini_{i,t} = \eta_0 + \eta_1 lag \ln urbanpoveny_{i,t-5} + \eta_2 lagprop\_urban_{i,t-5} + \eta_3 lagnetmig\_rate_{r-5} + \eta_4 lageconomic\_growth_{t-5} + \eta_5 non\_agri_{t-5} + \eta_6 \ln urban \exp\_cap_{i,t} + \eta_7 prop\_electricity_{i,t} + \eta_8 \ln \min\_wage_{i,t} + \eta_9 \ln ner\_junhigh_{i,t} + \eta_{10} lag \ln urbangini_{i,t} + \delta_i + \varepsilon_{i,t}$$

6. Urbanization equation

$$prop\_urban_{i,t} = \sigma_0 + \sigma_1 lag \ln urbanpoveny_{i,t-5} + \sigma_2 lagprop\_urban_{i,t-5} + \sigma_3 lagnetmig\_rate_{r-5} + \sigma_4 lageconomic\_growth_{t-5} + \sigma_5 non\_agri_{t-5} + \sigma_6 \ln urban \exp\_cap_{i,t} + \sigma_7 prop\_electricity_{i,t} + \sigma_8 \ln \min\_wage_{i,t} + \sigma_9 \ln ner\_junhigh_{i,t} + \sigma_{10} lag \ln urbangini_{i,t} + \delta_i + \varepsilon_{i,t}$$

7. Interprovincial migration equation

$$netmig\_rate_{i,t} = \beta_0 + \beta_1 lag \ln urbanpoveny_{i,t-5} + \beta_2 lagprop\_urban_{i,t-5} + \beta_3 lagnetmig\_rate_{r-5} + \beta_4 lageconomic\_growth_{t-5} + \beta_5 non\_agri_{t-5} + \beta_6 \ln urban \exp\_cap_{i,t} + \beta_7 prop\_electricity_{i,t} + \beta_8 \ln \min\_wage_{i,t} + \beta_9 \ln ner\_junhigh_{i,t} + \beta_{10} lag \ln urbangini_{i,t} \delta_i + \varepsilon_{i,t}$$

8. Economic growth equation

$$economic\_growth_{i,t} = \rho_0 + \rho_1 lag \ln urbanpoverty_{i,t-5} + \rho_2 lagprop\_urban_{i,t-5} + \rho_3 lagnetmig\_rate_{r-5} + \rho_4 lageconomic\_growth_{t-5} + \rho_5 non\_agri_{t-5} + \rho_6 \ln urban \exp\_cap_{i,t} + \rho_7 prop\_electricity_{i,t} + \rho_8 \ln \min\_wage_{i,t} + \rho_9 \ln ner\_junhigh_{i,t} + \rho_{10} lag \ln urbangini_{i,t} + \delta_i + \varepsilon_{i,t}$$

The main equation used here is the reduced form of the modified estimation (Ravallion and Chen 1997; Adams and Page 2003, 2005). This is also an extension of Miranti et al. (2013) and Miranti et al. (2014), which estimate the growth elasticity of poverty in Indonesia using panel data at the provincial level (1984–2010) with provincial poverty as the dependent variable.

9. Urban poverty equation

$$\ln urbanpoverty_{i,t} = \gamma_0 + \gamma_1 \ln urbangini_{i,t} + \gamma_2 prop\_urban_{i,t} + \gamma_3 netmig\_rate + \gamma_4 economic\_growth + \gamma_5 \ln urban \exp\_cap + \gamma_6 prop\_electricity + \gamma_7 \ln \min\_wage + \gamma_8 \ln ner\_junhigh + \delta_i + \varepsilon_{i,t}$$

where

*i* is province.
*t* is year (1995, 2000, 2005, and 2010).
*urbanpoverty* is the urban poverty incidence (%).
*urbangini* is the urban Gini coefficient.
*prop_urban* is the proportion of urban population (%).
*netmig_rate* is the rate of net migration (in-migration – out-migration) per 1000 population.
*economic_growth* is the annual economic growth of regional gross domestic product (RGDP) per capita (%).
*urbanexp_cap* is the urban expenditure per capita (IDR).
*prop_electricity* is the proportion of household with state electricity subscription (%).
*min_wage* is the provincial minimum wage (IDR).
*ner_junhigh* is the net enrollment ratio for junior high school (%).
*non_agri* is the proportion of nonagricultural RGDP to total RGDP (%).
$\delta$ is provincial fixed effects.
$\varepsilon$ is random errors.

# 5 Estimation Results

## *5.1 Findings from Household Data Analysis*

The estimated marginal effects of the explanatory variables of probability of being in the bottom 20% or top 20% of household per capita expenditure are shown in Table 3.4. The bottom 20% and top 20% are calculated on the basis of the distribution of yearly household per capita expenditure. Some important findings are as follows.

### 5.1.1 Migration Status

Table 3.4 shows that after controlling for individual and household characteristics and compared to the local population or nonmigrants, the migration status (particularly for the recent migrants) has a significant effect in determining the likelihood of being in the bottom quintile and top quintile. Being a recent migrant has a higher marginal effect in reducing the probability of being in the bottom 20% than the long-term migrant. The likelihood of being in the bottom 20% of household expenditure is reduced by 11.4 percentage points for a recent migrant and around 4.2 percentage points for a long-term migrant compared to the nonmigrants. The finding for recent migrants indicates those migrants have better socioeconomic status than the nonmigrants, which may refer to the fact that migration is indeed selective. Effendi et al. (2010a, b) find that recent migrants consist of younger individuals with better education. Compared to the nonmigrants and holding other variables constant, the impact of being a recent migrant is significant and increases the likelihood of being in the top of the expenditure distribution by five percentage points.

### 5.1.2 Head of Household/Demographic Characteristics

It seems the number of children—that is, the number of dependents in a household—is a significant determinant and increases the likelihood of being in the bottom quintile of household expenditure. Age has a significant and negative association with the likelihood of being in the bottom 20% and increases the likelihood of being in the top 20%. This may indicate that the older the age, the more capable/experienced the person is to explore various opportunities to increase the likelihood of their household living in a better socioeconomic condition. The impact of gender of the head of household is surprisingly not significant, while the impact of marital status is limited, with a divorcee/widow decreasing the likelihood of being in the top

**Table 3.4** Findings of RUMiI data

| | | Probability of being in the bottom 20% | | | Probability of being in the top 20% | | |
|---|---|---|---|---|---|---|---|
| | | Marginal effect | Std. error | Sig | Marginal effect | Std. error | Sig |
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| *Head of household demographic characteristics* | | | | | | | |
| Female headed | | 0.015 | 0.029 | | −0.003 | 0.022 | |
| Age | | −0.002 | 0.001 | * | 0.004 | 0.001 | *** |
| Number of children | | 0.025 | 0.004 | *** | −0.027 | 0.006 | *** |
| Education | (Base: no schooling) | | | | | | |
| | Did not complete the primary | −0.016 | 0.031 | | −0.112 | 0.022 | *** |
| | Primary school | −0.048 | 0.026 | * | −0.083 | 0.024 | *** |
| | Junior high school | −0.069 | 0.024 | *** | −0.030 | 0.028 | |
| | Senior high school | −0.118 | 0.025 | *** | 0.024 | 0.029 | |
| | Diploma | −0.138 | 0.016 | *** | 0.121 | 0.064 | * |
| | Bachelor's degree and above | −0.132 | 0.016 | *** | 0.154 | 0.055 | *** |
| Marital status | (Base: single) | | | | | | |
| | Married | 0.145 | 0.027 | | −0.295 | 0.041 | *** |
| | Divorce/widow | 0.281 | 0.081 | * | −0.115 | 0.018 | *** |
| *Head of household labor market characteristics* | | | | | | | |
| Industry | (Base: manufacturing) | | | | | | |
| | Construction | 0.074 | 0.038 | * | −0.056 | 0.030 | * |
| | Finance | 0.153 | 0.118 | | 0.079 | 0.087 | |
| | Real estate | 0.143 | 0.158 | | 0.008 | 0.114 | |
| | Education and health | 0.003 | 0.047 | | 0.034 | 0.042 | |
| | Trade, service, and others | 0.025 | 0.021 | | −0.027 | 0.021 | |
| Employment status (Base: not working) | | | | | | | |
| | Employee | 0.030 | 0.029 | | 0.031 | 0.028 | |
| | Civil service or military | −0.094 | 0.029 | *** | 0.121 | 0.062 | ** |
| | Self-employee/ unpaid | −0.028 | 0.029 | | 0.111 | 0.040 | *** |

Source: Author's calculation from RUMiI data
Note: Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively

20% by 11.5 percentage points, compared to a single person. Marriage is also negatively correlated with being in the top of the expenditure distribution, as compared to a single person; being married decreases the likelihood of being in the top 20% by almost 30 percentage points. The main message from the marriage variable is

**Table 3.4** (continued)

| | | Probability of being in the bottom 20% | | | Probability of being in the top 20% | | |
|---|---|---|---|---|---|---|---|
| | | Marginal effect | Std. error | Sig | Marginal effect | Std. error | Sig |
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| *Migration status (Base: local, not migrant)* | | | | | | | |
| | Recent migrant | −0.114 | 0.020 | *** | 0.049 | 0.028 | * |
| | Long-term migrant | −0.042 | 0.015 | *** | 0.010 | 0.018 | |
| *Housing condition—sanitation (Base: no sanitation)* | | | | | | | |
| | Have toilet and bathroom | −0.141 | 0.065 | ** | 0.067 | 0.060 | |
| | Have either toilet or bathroom | −0.022 | 0.048 | | −0.026 | 0.076 | |
| | Public toilet | −0.049 | 0.042 | | 0.011 | 0.082 | |
| Number of observation | | 2426 | | | 2426 | | |
| Log likelihood | | −1052.724 | | | −1024.280 | | |
| Pseudo $R^2$ | | 0.135 | | | 0.155 | | |
| Marginal effects after logit | | 0.154 | | | 0.152 | | |

Source: Author's calculation from RUMiI data
Note: Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively

that a person who is single, or without any dependents, is more correlated with higher income/wealth.

Human capital is also an important determinant in comparison to those who do not have education. For example, having an educational attainment of a bachelor's degree or above decreases the likelihood of being in the bottom quintile of household per capita expenditure by 13.2 percentage points compared to those who do not have education. The higher the level of educational attainment, the stronger these effects tend to be. The regression to estimate the likelihood of being in the top 20% indicates that the role of having tertiary education at the diploma level or bachelor's degree and above is crucial.

### 5.1.3 Head of Household Labor Market Characteristics

The labor market effect is somewhat limited, with only working in the construction industry (compared to manufacturing) having a significant increase in the likelihood of being in the bottom quintile and reducing the likelihood of being in the top quintile. This indicates that having a blue-collar occupation is related to a higher likelihood of being at the bottom of the income distribution.

Based on the labor market status, the findings show that being a member of the civil services or military services is advantageous (compared to not working), which reduces

the likelihood of being in the bottom quintile or increases the likelihood of being in the top quintile, other things held constant. Having an own business or family work significantly increases the likelihood of being in the top quintile (Appendix Table 3.8).

### 5.1.4 Housing Condition (Infrastructure)

We have chosen sanitation to represent the housing condition of the household as the other categories within this variable are mutually exclusive. As expected, compared to households that do not have sanitation facilities, living in households that have proper sanitation (e.g., toilet and bathroom) reduces the likelihood of being in the bottom quintile.

## *5.2 Findings from Macro-panel Data Analysis*

Appendix Table 3.9 discusses the regression results for model (i), which has not acknowledged the interdependencies between the four variables.[7] It is shown that there are some significant associations between the four variables. For example, interprovincial migration has a negative impact on urban inequality; urban inequality reduces interprovincial migration; urbanization significantly reduces urban poverty.

Tables 3.5 and 3.6 present the regression results for model (ii), which acknowledges the interdependencies. The result from the Hausman test indicates the preference to use random effects estimation rather than fixed effects. Table 3.5 displays the results from the first stage of the regressions, where the causality runs from the lag of the urban poverty incidence 5 years ago and other exogenous variables to the endogenous variables (urban inequality, urbanization, net interprovincial migration, and economic growth). Table 3.6 provides the second stage of the main equation, where the opposite causality runs from urban inequality, urbanization, net interprovincial migration, and economic growth to urban poverty.

The results of the first-stage regressions show that, as expected, the lags of the explanatory variables have significant impacts on their respective contemporaneous dependent variables (see Table 3.5). Urban inequality is positively affected by urban mean expenditure per capita and the 5-year lag of the urban poverty rate, which is expected. Although there is a positive impact of urbanization on urban inequality, the impact is not significant. The higher the expenditure per capita of urban population on average, the higher is the inequality. The results of the coefficient of lag of urban poverty rate 5 years ago mean that higher poverty rates in the past should be translated to higher effort required to improve the welfare of people living in the bottom quintile of income distribution, and if the other part of the distribution does not change, this may increase inequality.

[7] Table A1 presents the correlation coefficient between the variables.

**Table 3.5** First-stage regressions—endogenous variables (random effect, 2SLS)

| | Urban inequality | | | Urbanization | | | Net provincial migration | | | Economic growth | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std. | Sig. | Coef. | Std. | Sig. | Coef. | Std. | Sig. | Coef. | Std. | Sig. |
| ln*urbanexp_cap* | 0.185 | 0.067 | *** | 8.937 | 2.813 | *** | −3.198 | 13.046 | | 2.269 | 2.319 | |
| *prop_electricity* | 0.002 | 0.002 | | 0.200 | 0.066 | *** | −0.200 | 0.308 | | 0.105 | 0.055 | * |
| ln*min_wage* | −0.038 | 0.063 | | −8.521 | 2.645 | *** | 4.428 | 12.268 | | −1.188 | 2.181 | |
| ln*ner_junhigh* | 0.158 | 0.142 | | 2.107 | 5.959 | | −6.517 | 27.640 | | 5.509 | 4.914 | |
| lag ln*urbangini* | −0.270 | 0.092 | *** | -13.438 | 3.888 | *** | 10.257 | 18.031 | | −0.614 | 3.206 | |
| lag *prop_urban* | 0.002 | 0.002 | | 0.510 | 0.074 | *** | −0.392 | 0.341 | | −0.132 | 0.061 | ** |
| lag *netmig_rate* | 2.278E-04 | 0.001 | | −7.824E-03 | 0.022 | | −4.119E-01 | 0.103 | *** | 5.667E-03 | 0.018 | |
| lag *economic growth* | −2.626E-04 | 0.001 | | 0.028 | 0.031 | | −0.125 | 0.144 | | −0.194 | 0.026 | **** |
| *prop non_agri to GDP* | −0.003 | 0.003 | | 0.412 | 0.123 | *** | 0.104 | 0.571 | | −0.024 | 0.101 | |
| lag ln*urbanpov_rate* | 0.057 | 0.031 | * | −0.279 | 1.320 | | −0.509 | 6.121 | | −1.268 | 1.088 | |
| *constant* | −4.366 | 0.661 | *** | −109.372 | 27.775 | *** | 74.792 | 128.819 | | −39.512 | 22.902 | * |

Source: Author's calculation

Note: Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively

**Table 3.6** Main equation

| | Urban poverty | | |
|---|---|---|---|
| | Coef. | Std. err. | Sig. |
| ln*urbangini* | 1.488 | 0.817 | * |
| *prop_urban* | −0.016 | 0.008 | ** |
| *netmig_rate* | 1.796E-04 | 0.004 | |
| *economic growth* | −0.014 | 0.012 | |
| ln*urbanexp_cap* | −0.654 | 0.303 | ** |
| *prop_electricity* | 0.000 | 0.006 | *** |
| ln*min_wage* | −0.050 | 0.229 | |
| ln*ner_junhigh* | 0.697 | 0.529 | |
| *constant* | 10.470 | 4.354 | ** |
| sigma_u | 0.407 | | |
| sigma_e | 0.204 | | |
| rho | 0.799 | | |
| $R^2$: within | 0.687 | | |
| between | 0.587 | | |
| overall | 0.586 | | |
| *N* | 69 | | |

Source: Author's calculation
Note: Significance at the 1%, 5%, and 10% levels are denoted by ***, **, and *, respectively

We also examine variables that explain urbanization and find that there are significant and positive impacts of urban mean expenditure per capita, access to electricity, and the proportion of nonagricultural sector to the GDP. These associations are expected as urbanization would increase when a province is more developed with higher income and better access to infrastructure and when the development of the nonagricultural sector (which supports the finding from Hofmann and Wan 2013) or formal employment also happens. Minimum wage is surprisingly found to reduce urbanization. Increasing the minimum wage to protect employees and increase their well-being may hinder formal employment in the urban areas when it is set above the market wage and creates unemployment, as indicated in the Harris–Todaro model. This is particularly true for Indonesia, where the application of a minimum wage potentially has an adverse impact on employment in the urban labor-intensive manufacturing sector. Further, despite minimum wages having increased by around 6.5% per year between 2000 and 2010, the effect has been limited, and it is not beneficial for those who are in the bottom of the wage distribution. Not to mention that an increase in the minimum wage is usually also followed by increases in commodity prices, which does not improve workers' consumption (Bird and Manning 2008). If this is happening, it is not surprising that it has impeded the urbanization process.

The net migration equation surprisingly shows that only the lag of the net migration variable is significant. The finding from the economic growth equation that urbanization has a negative association with economic growth is also somewhat surprising. An increase in the urbanization rate by 1 percentage point reduces economic growth by 0.13 percentage point. This may be the result of the short panel data we have used in estimating the model or the fact that the urbanization rate has reached 50%, meaning it may have reached its peak so that economic growth may experience diminishing returns despite urbanization. Further investigation is required on this aspect. It is surprising that the education variable is not significant in all specifications that may indicate the limitation of the data we use—that is, the net enrollment ratio for junior high school. This variable may not capture the variation within provinces as Indonesia adopts the policy of 9 years of schooling. It is expected that the results would be better if we use the net enrollment ratio for the senior high school level. However, the longer time series of enrollment ratio data for secondary high school is not available. We have also used the educational attainment data, which does not improve the regression results.

Table 3.6 shows further findings from the main equation, which examines the reverse causality from the endogenous explanatory variables on urban poverty and the impacts on poverty of the other exogenous variables, which are the urban expenditure per capita, access to electricity, minimum wage, and net enrollment ratio at the junior high school and equivalent level. As expected, the results show that 1% increase in urban inequality measured by the Gini index will contribute to around 1.5% increase in urban poverty rate, while a 1% increase in the mean expenditure of the urban population will contribute to 0.7% decline in the urban poverty rate. Inequality has hampered the impact of the increase of average expenditure to the poverty rate. The rate of urbanization is poverty reducing in urban areas. It is inter-

**Table 3.7** Summary of interdependencies

| | | |
|---|---|---|
| *Dual causality* | | |
| Urban poverty | ⟷ | Urban inequality |
| *Single causality* | | |
| Urbanization | → | Urban poverty |
| Urban inequality | → | Urbanization |
| Urban mean expenditure per capita | → | Urban poverty |
| Urban mean expenditure per capita | → | Urban inequality |
| Urban mean expenditure per capita | → | Urbanization |
| Minimum wage | → | Urbanization |
| Proportion of electricity | → | Urban poverty |
| Proportion of electricity | → | Economic growth |
| Proportion of nonagricultural sector to GDP | → | Urbanization |

Source: Author's summary

esting that the coefficient of better facilities and infrastructure, as indicated by electricity, while significant at 1%, is really marginal, being close to zero.

Table 3.7 provides the summary of the results from the aggregate/macroanalysis, which shows that interdependencies do indeed exist but mostly in the form of single direction causality. Dual causality has been only found in the relationship between urban poverty and inequality.

## 6 Conclusion and Policy Recommendations

This chapter investigates the issues and interdependencies of urbanization, internal migration, urban poverty, and urban inequality in Indonesia. There are two key objectives of the chapter. First, in the microanalysis, the focus is on examining the determinants of the likelihood of being in relative poverty (the bottom versus the top expenditure quintile). Second, the macroanalysis examines the determinants of urban poverty by taking into account the potential interdependencies between urban poverty, urbanization, internal migration, and urban inequality.

The results from microanalysis using rural–urban migration data in Indonesia (RUMiI), which test the determinants of the likelihood of being in the bottom 20% and top 20% of expenditure distribution, show the importance of migration status and various demographic and socioeconomic characteristics as the explanatory variables. These include age, number of children, education, marital status, and labor market characteristics. The results from macro−/aggregate analysis using panel data of provinces in Indonesia from 1995 to 2005 show that the presence of causality is mostly in the form of a single causality, except the dual causality that exists between urban poverty and urban inequality.

The findings from both the macro- and microanalyses, if not supporting each other, are complementary. The link between micro- and macroanalysis is present from the analysis, particularly on two main points. First, the finding that urbanization is poverty reducing (from the macroanalysis) has been supported by the finding that rural–urban migration (measured by migration status), which is one of the determinants of urbanization, has an impact on reducing the likelihood of being in the bottom 20%. Second, both the macro- and microanalyses support the importance of the provision and access to basic facilities or infrastructure as a strategy to reduce poverty. The results from the housing (sanitation) condition from the microanalysis and the proportion of households with electricity from the macroanalysis support this conclusion. However, it looks like the channel at the aggregate

level is indirect, which is from electricity, which significantly increases urbanization, which in turn reduces the rate of urban poverty.

With microanalysis, the results provide more evidence from the labor market perspective that the two measures used in the analysis—that is, industry of work and employment status—have some effect on the likelihood of being in the bottom or top 20% of the distribution. In contrast, the impact of minimum wage is not significant in the macroanalysis, whereas that of education is also captured by the microanalysis but not the macroanalysis.

We conclude that interdependencies do exist between the four variables, but they are complex. Given these results, our question is: what are the strategies and policy recommendations to jointly manage the interdependencies among the elements of the internal migration–urbanization–poverty–inequality nexus in Indonesia? First, the dual causality between urban poverty and urban inequality suggests that policies should aim to reduce not only poverty but also inequality. Policies to reduce inequality are back on the table for discussion, after many concerns have been raised on the increasing inequality experienced by this country. Efforts are required to not only improve the welfare of the bottom 20% of the population, which includes those who are poor, but also have more equalizing fiscal policy and tax reforms to ensure the redistribution from the top 20% of population. Second, urbanization through rural–urban migration is poverty reducing since migrants who move to urban areas are usually the young and the more educated. The implication of this is the need for better formal job opportunities being made available in the urban areas for absorbing these workers. This will be a challenge because previous data suggest that job seekers are never fully absorbed into the labor market, given the number of vacancies available to those seeking employment. Thus, incentives should be offered to various business/investment opportunities to create more jobs in urban areas and to reduce barriers to labor market entry. Third, the importance of education and availability of good infrastructure, in terms of access to electricity and good sanitation, are also very important. These will improve the quality of life of the rural–urban migrants and link them with employment, trade activities, further education, and other activities. More expenditure directed toward this should be recommended.

# Appendix

**Table 3.8** Correlation coefficient

| Variables | *urbanpov_rate* | *urbangini* | *urban* | *netmig_rate* | *Economic growth* | *urbanexp_cap* | *prop_electricity* | *min_wage* | *ner_junhigh* | *prop non_agri to GDP* |
|---|---|---|---|---|---|---|---|---|---|---|
| *urbanpov_rate* | 1 | | | | | | | | | |
| *urbangini* | −0.03 | 1.00 | | | | | | | | |
| *urban* | −0.35 | 0.33 | 1.00 | | | | | | | |
| *netmig_rate* | −0.13 | −0.21 | −0.19 | 1.00 | | | | | | |
| *economic growth* | 0.09 | 0.11 | −0.05 | 0.00 | 1.00 | | | | | |
| *urbanexp_cap* | −0.46 | 0.44 | 0.32 | 0.03 | −0.10 | 1.00 | | | | |
| *prop_electricity* | −0.16 | 0.40 | 0.71 | −0.19 | −0.05 | 0.36 | 1.00 | | | |
| *min_wage* | −0.42 | 0.36 | 0.19 | 0.05 | −0.10 | 0.94 | 0.29 | 1.00 | | |
| *ner_junhigh* | −0.14 | 0.33 | 0.57 | −0.13 | −0.17 | 0.45 | 0.72 | 0.41 | 1.00 | |
| *prop non_agri to GDP* | −0.39 | 0.10 | 0.79 | −0.02 | −0.13 | 0.19 | 0.54 | 0.12 | 0.36 | 1 |

Source: Author's summary

**Table 3.9** Independent estimations

| | Urban inequality | | | Urbanization | | | Net provincial migration | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coef. | Std. | Sig. | Coef. | Std. | Sig. | Coef. | Std. | Sig. |
| ln*p0* | 0.029 | 0.027 | | 0.239 | 1.592 | | −4.557 | 5.307 | |
| ln*urbangini* | | | | 1.661 | 5.036 | | −35.443 | 17.070 | ** |
| *prop_urban* | 0.002 | 0.002 | | | | | −0.354 | 0.329 | |
| *netmig_rate* | −1.011E-03 | 0.001 | * | −0.022 | 0.031 | | | | |
| *economic growth* | 0.002 | 0.001 | ** | 0.020 | 0.041 | | 0.363 | 0.143 | *** |
| ln*urbanexp_cap* | 0.109 | 0.070 | | 11.272 | 3.260 | *** | 1.436 | 12.106 | |
| *prop_electricity* | 0.001 | 0.001 | | 0.236 | 0.068 | *** | −0.172 | 0.233 | |
| *prop non_agri* | −0.001 | 0.002 | | 0.776 | 0.120 | *** | 0.299 | 0.453 | |
| ln*min_wage* | −0.011 | 0.066 | | −9.828 | 3.055 | *** | 1.811 | 11.285 | |
| ln*ner_junhigh* | −0.105 | 0.098 | | 3.142 | 5.267 | | 25.056 | 17.929 | |
| *constant* | −2.118 | 0.619 | *** | −130.741 | 30.679 | *** | −156.560 | 114.283 | |
| sigma_u | 0.047 | | | 7.287 | | | 20.530 | | |
| sigma_e | 0.096 | | | 3.771 | | | 15.654 | | |
| rho | 0.197 | | | 0.789 | | | 0.632 | | |
| $R^2$: | | | | | | | | | |
| within | 0.400 | | | 0.598 | | | 0.123 | | |
| between | 0.229 | | | 0.791 | | | 0.137 | | |
| overall | 0.391 | | | 0.777 | | | 0.110 | | |

Source: Author's calculation
Note: Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively

| | Urban poverty | | |
|---|---|---|---|
| | Coef. | Std. err. | Sig. |
| ln*urbangini* | −0.047 | 0.361 | |
| *prop_urban* | −0.017 | 0.005 | *** |
| *netmig_rate* | −0.002 | 0.002 | |
| *economic growth* | 0.002 | 0.003 | |
| ln*urbanexp_cap* | −0.110 | 0.242 | |
| *prop_electricity* | 0.005 | 0.005 | |
| ln*min_wage* | −0.249 | 0.229 | |
| ln*ner_junhigh* | 1.012 | 0.357 | *** |
| *constant* | 1.327 | 2.043 | |
| sigma_u | 0.367 | | |
| sigma_e | 0.318 | | |
| rho | 0.572 | | |
| $R^2$: within | 0.347 | | |
| between | 0.387 | | |
| overall | 0.382 | | |
| *N* | 103 | | |

Source: Author's calculation
Note: Significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively

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